IN THE CLAIMS

COMPLETE LISTING OF ALL CLAIMS, WITH MARKINGS AND STATUS IDENTIFIERS
(Currently amended claims showing deletions by ~~strikethrough~~ and additions by underlining)

This listing of claims will replace all prior versions and listings of the claims in the application.

Listing of Claims:

1-45. Cancelled.

46. (new) A preservation mixture comprising:

a virus, bacteria or other cell which is sensitive to loss of viability during drying and storage at ambient or higher temperatures;

a methylated monosaccharide selected from the group consisting of methyl α-glucopyranoside and methyl β-glucopyanoside; and

a disaccharide selected from the group consisting of sucrose and trehalose, or alternatively, an oligosaccharide.

47. (new) The preservation mixture of Claim 46, wherein the preservation mixture has a total solute mass, and wherein the methylated monosaccharide comprises between 5% and 80% wt% of the total solute mass.

48. (new) The preservation mixture of Claim 46, wherein the methylated monosaccharide comprises between 20% and 60% wt% of the total solute mass.

49. (new) The preservation mixture of Claim 46, wherein the preservation mixture has a total solute mass, and wherein the disaccharide comprises between 5% and 80% wt% of the total solute mass.

50. (new) The preservation mixture of Claim 49, wherein the disaccharide comprises between 20% and 60% wt% of the total solute mass.

51. (new) The preservation mixture of Claim 46, wherein the preservation mixture has a total solute mass, and wherein the oligosaccharide comprises between 5% and 80% wt% of the total solute mass.

52. (new) The preservation mixture of Claim 51, wherein the oligosaccharide comprises between 20% and 60% wt% of the total solute mass.

53. (new) A method of preserving a virus, bacteria or other cell which is sensitive to loss of viability during drying and storage at ambient or higher temperatures, the method comprising:

mixing the virus, bacteria or other cell with a protectant comprising a methylated monosaccharide selected from the group consisting of methyl (α or β)-glucose and at least one additional compound selected from the group consisting of disaccharides and oligosaccharides to form a preservation mixture; and

drying the preservation mixture by foam formation comprising the formation of a mechanically stable porous foam structure by boiling said preservation mixture under a vacuum.

54. (new) The method of Claim 53, wherein said virus, bacteria or other cell further comprises a vaccine or vector.

55. (new) The method of Claim 53, wherein the preservation mixture has a total solute mass, and wherein the methylated monosaccharide comprises between 5% and 80% wt% if the total solute mass.

56. (new) The method of Claim 55, wherein the methylated monosaccharide comprises between 20% and 60% wt% of the total solute mass.

57. (new) The method of Claim 53, wherein the disaccharide is sucrose or trehalose.

58. (new) The method of Claim 53, wherein the preservation mixture has a total solute mass, and wherein disaccharides comprise 5% and 80% wt% of the total solute mass.

59. (new) The method of Claim 58, wherein the disaccharide comprises between 20% and 60% wt% if the total solute mass.

60. (new) The method of Claim 53, wherein the preservation mixture has a total solute mass, and wherein oligosaccharides comprise between 5% and 80% wt% of the total mass.

61. (new) The method of Claim 60, wherein the oligosaccharide comprises between 20% and 60% wt% of the total solute mass.

62. (new) The method of Claim 53, wherein the at least one additional compound is sucrose, and wherein the ratio of sucrose to (α or β)-d-glucose is between 4:1 to 1:2.

63. (new) The method of Claim 53, wherein mixing further comprises at least two steps including loading the virus, bacteria or other cell with the methylated monosaccharide and then adding the at least one additional compound to form the preservation mixture.

64. (new) The method of Claim 63 wherein loading is achieved by equilibration of the virus, bacteria or other cell in a solution containing the methylated monosaccharide.

65. (new) The method of Claim 53, further comprising a step of secondary drying.

66. (new) The method of Claim 65, wherein said secondary drying is conducted at a temperature in a range of 0° to 100°C.

67. (new) The method Claim 66, wherein said secondary drying is continued until the glass transition temperature is raised above a selected storage temperature within a range of 0° to 70°C.

68. (new) The method of Claim 53, further comprising the step of milling said stable foam to form a powder.

69. (new) The method of Claim 68, further comprising the step of secondary drying said powder.

70. (new) A method of preserving a virus, bacteria or other cell which is sensitive to loss of viability during drying and storage at ambient or high temperatures, the method comprising:

mixing the virus, bacteria or other cell with a protectant comprising a monosaccharide and at least one disaccharide; and

drying the resulting mixture by boiling under vacuum without freezing to form a stable foam.

71. (new) The method of Claim 70, further comprising a step of secondary drying said stable foam at a temperature in a range of 0° to 100° C.